

In the Claims

1 - 5 (Canceled).

6. (Currently amended) A method of manufacturing an integrated circuit device, comprising:

forming a pattern comprising a pair of mesa regions on a substrate;

forming a first insulating layer on the pair of mesa regions;

forming a second insulating layer on the pair of mesa regions and the substrate;

forming a capping layer on the second insulating layer;

patterning the capping layer and the second insulating layer together, such that parts of the first insulating layer that were covered by the second insulating layer are exposed without exposing the mesa regions under the first insulating layer; and

forming insulating spacers on sidewalls of the second insulating layer such that the second insulating layer is enclosed by the insulating spacers, the capping layer, the first insulating layer, and the substrate; -

forming a conductive layer on the pair of mesa regions and the substrate so as to fill a contact region between the pair of mesa regions and to cover the mesa regions; and

removing a portion of the conductive layer such that an upper surface of the first insulating layer, opposite the substrate, is exposed.

7. (Original) The method of Claim 6, wherein the second insulating layer is a spin on glass layer.

8. (Original) The method of Claim 6; further comprising:
applying a cleaning solution to the integrated circuit device so as to expose a contact region between the pair of mesa regions by removing at least a portion of a native oxide layer from the contact region.

9. (Original) The method of Claim 8, wherein the cleaning solution comprises at least one of hydrofluoric (HF) acid or a mixture of NH₄OH, H₂O₂, and H₂O.

10. (Canceled)

11. (Currently amended) The method of Claim 10 6, wherein removing the portion of the conductive layer comprises:

chemical mechanical polishing the conductive layer such that the upper surface of the first insulating layer, opposite the substrate, is exposed.

12. (Original) The method of Claim 6, wherein the capping layer may comprise at least one of silicon oxide, silicon nitride, undoped polysilicon, doped polysilicon, or Al₂O₃.

13. (Original) The method of Claim 6, wherein forming the insulating spacers comprises:

forming a third insulating layer on the capping layer, the sidewalls of the second insulating layer, and the substrate; and

etching the third insulating layer so as to remove at least a portion of the third insulating layer from the substrate and an upper surface of the capping layer, opposite the substrate.

14. (Currently amended) The method of Claim 10 6, wherein each of the insulating spacers has a width in a range of about 50 Å to about 200 Å.

15. (Currently amended) A method of manufacturing an integrated circuit device, comprising:

forming a pattern comprising a pair of mesa regions on a substrate;

forming a first insulating layer on the pair of mesa regions;

forming an etch stop layer on the substrate;

forming a second insulating layer on the pair of mesa regions and the etch stop layer;
forming a capping layer on the second insulating layer;
patterning the capping layer and the second insulating layer together, such that parts of the first insulating layer that were covered by the second insulating layer are exposed without exposing the mesa regions under the first insulating layer; and
forming insulating spacers on sidewalls of the second insulating layer such that the second insulating layer is enclosed by the insulating spacers, the capping layer, the first insulating layer, and the etch stop layer;
forming a conductive layer on the pair of mesa regions and the substrate so as to fill a contact region and to cover the mesa regions; and
removing a portion of the conductive layer such that an upper surface of the first insulating layer, opposite the substrate, is exposed.

16. (Original) The method of Claim 15, wherein the second insulating layer is a spin on glass layer.

17. (Original) The method of Claim 15, wherein forming the insulating spacers comprises:

forming a third insulating layer on the capping layer, the sidewalls of the second insulating layer, and the etch stop layer; and
etching the third insulating layer so as to remove at least a portion of the third insulating layer from the second insulating layer and an upper surface of the capping layer, opposite the substrate.

18. (Currently amended) The method of Claim 17, further comprising:
removing at least a portion of the etch stop layer from ~~a~~ the contact region between the pair of mesa regions.

19. (Original) The method of Claim 18, further comprising:

applying a cleaning solution to the integrated circuit device so as to expose the contact region by removing at least a portion of a native oxide layer from the contact region.

20. (Original) The method of Claim 19, wherein the cleaning solution comprises at least one of hydrofluoric (HF) acid or a mixture of NH₄OH, H₂O₂, and H₂O.

21. (Canceled)

22. (Currently amended) The method of Claim ~~24~~ 15, wherein removing the portion of the conductive layer comprises:

chemical mechanical polishing the conductive layer such that the upper surface of the first insulating layer, opposite the substrate, is exposed.

23. (Original) The method of Claim 15, wherein each of the insulating spacers has a width in a range of about 50 Å to about 200 Å.

24. (Original) The method of Claim 15, wherein the capping layer may comprise at least one of silicon oxide, silicon nitride, undoped polysilicon, doped polysilicon, or Al₂O₃.

25 - 29. (Canceled).